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ABSTRACT

Designed to introduce the college student to library research and information use skills, this guide begins with an initial survey of the topic and progresses to how to write a report. It is divided into the following sections: (1) Introduction to Library Research; (2) Analyzing Your Subject and Beginning Your Research Plan; (3) Gathering Information Sources (e.g., determining appropriate research guides, choosing among available information sources, using library catalogs, boolean searches, using indexes, and locating sources not owned by the library); (4) Reading and Analyzing Information Sources (e.g., noting frames of reference, the importance of questioning sources); (5) Reporting Your Research (e.g., formulating the thesis, developing the report, and information research and communication skills); and (6) Functioning in an Information Based Society. Worksheets accompany several of the sections. (MAB)

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A STUDENT'S GUIDE TO EFFECTIVE LIBRARY RESEARCH

Threasa L. Wesley

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INTRODUCTION TO LIBRARY RESEARCH

We all use information daily --- often in informal ways, deciding to go to a particular movie based upon a friend's recommendation, buying a particular brand of healthful cereal based upon a television commercial, taking a particular medicine based on a doctor's instructions. The more important the decision, the more seriously we should look at the sources and content of the information we receive. For example, you might go to a movie based upon one recommendation that you overheard from two strangers talking in line at McDonald's. However, if you were considering spending enough money to buy a car you would look for advice from sources of known authority --- your mechanic, a trusted friend or family member, Consumer Reports... The car sales person's urgings would simply not be sufficient.

In order to be prepared to find these authoritative sources of information when critical decisions come your way --- choosing a career, evaluating an investment opportunity, choosing among several possible treatments for a serious disease, voting, etc. --- you must develop fairly sophisticated information use skills. These skills involve analysis of the type of information needed to investigate a question, the manipulation of the formal information retrieval systems to identify possible sources, and the evaluation of each source's content once you have found the information. When you are adept at all these skills, then you are a savvy information consumer and effective library researcher.

This text, like the information research assignments you receive in your courses, is designed to help you develop these information use skills. Using A Student's Guide to Effective Library Research as you work through any assigned research project, will certainly guide you in the development a successful research project to report to your class and instructor. More importantly, this text will help you gain a foundation for skillful information use that will be invaluable to you in your career or personal avocations.

What is Library Research?

You may have a misconception about how to approach an information research project. Whenever there is mention of a term paper, or a speech, or a class debate, your head probably starts spinning with the demands for a thesis statement, a

concluding paragraph, and persuasive arguments. If you begin to concern yourself too early with these rhetorical methods of presenting the results of your research, your research will be incomplete, unconvincing, and ineffective. Remember this:

> RESEARCH *IS* A METHOD FOR THE STUDY, QUESTIONING, INVESTIGATION, AND ANALYSIS OF A SUBJECT. RESEARCH *IS NOT* RETRIEVING A COLLECTION OF QUOTATIONS, STATISTICS, CHARTS, MAPS. ETC. TO SUPPORT A SPECIFIC, PREDETERMINED CONCLUSION OR SOLUTION.

The ultimate goal of extended study or research is to thoughtfully form your own personal conclusion, solution, or view of an issue. However, an effective decision, a wise choice, a thoughtful point of view is *never* reached when the conclusion serves as the beginning point for study of the topic. In order to consider conflicting viewpoints, evaluate alternate courses of action, and identify all relevant facts, you must be open to a variety of possible conclusions and withhold judgment until you have investigated the relevant sources of information. Only then you can develop a thesis, an argument, a persuasive report.

Simply stated, conclusions come as a result of the information analysis you do. They do not direct the type of information you look for. The student who comes to the library to find articles reporting that bunge-jumping from bridges is unsafe will develop an incomplete, ineffective argument for his/her point of view, and will likely find the research project boring and a chore to complete. After all, he/she is only reading information they already "know." However, an investigation of all aspects of this trend --- it's history, the thrills it provides, records of accidents, equipment used, etc. --- may still lead to a conclusion that the sport is risky. On the other hand, the student might decide to write about the psychological profile of participants, or the best sites for jumping . . . The possibilities are endless. Moreover, he/she will be able to better support and present any personal position taken on the sport, and will feel more confident in basing weekend plans on the knowledge he/she has developed through information research.

Before we leave this brief definition of research, it is important to note that some research projects will not result in a decision or a conclusion at all, certainly not immediately. Some issues that you will begin to study in college are simply too complex to resolve in one semester's study. You may simply identify the concerns or arguments related to a topic. Full time experts are spending their careers investigating subjects such as welfare reform, funding of medical care, the lasting impact of the Beatles' music, safe disposal of hazardous wastes, etc. You can not expect to solve global issues such as these in a few short weeks. However, the study these specialists pursue as well as your own analysis must begin with the same basic steps: identifying components of the issue and the competing points of view involved, and reviewing research conducted to date. Your personal view, your answer to these complex questions can develop

as you further your study. Often, for now, for this one course, an initial description of the issues is a significant step. To expect more would demand that you oversimplify the issue and lead you to unrealistic conclusions.

What Does Effective Library Research Require?

Certainly effective library research, that which employs analysis of information needed, knowledgeable manipulation of research guides, and the evaluation of information sources, is more demanding that the glorified plagiarism in which many students engage by pulling together a collection of quotations and cited facts. In order to do effective library research you must learn to:

-- break up a complex idea into components
-- see relationships among ideas
-- identify main issues
-- identify related issues
-- identify relevant disciplines
-- determine appropriate types of information sources
-- estimate the quantity of information required
-- raise questions
-- recognize assumptions
-- evaluate evidence
-- evaluate authorities, publications
-- recognize bias, emotional appeals, propaganda, generalizations
-- determine relevancy of information
-- question the adequacy of the data
-- suspend judgment until research is ended.[1]

It is probably obvious to you that this type of library research can not be completed the weekend before the report of your research is due. If you are willing to undertake the challenge of effective library research, you must be willing to devote time as well as effort to the project. Allowing sufficient time to complete the project is critical. This type of research requires thoughtful consideration as you investigate each concern related to your topic. Indeed, effective research requires reflection not only upon the information that you uncover, but also upon the approach, the research design, you are employing for the investigation.

All this effort will be repaid manifold. You will see significant qualitative improvements in the first research projects you undertake in this thoughtful manner. Undoubtedly, the investigations will be much more stimulating endeavors. Moreover, you will be learning skills that will be essential to your future as you work and live in our information society. The collected body of knowledge in *every* field is changing so rapidly that no course, or group of courses, or major curriculum can adequately present you with all the information you will need to

know. In fact, there is no doubt that you will be required to *answer* questions that have not even been asked yet. The best preparation that you can gain is the ability to use information effectively as you make these decisions and find these answers of the future.

This workbook has been designed to introduce you to these critical library research and information use skills. Beginning with an initial survey of your topic and progressing through the development of a report of your own research findings, you will be led each step. You may use this text as a guide for any research project you are assigned. By reading the texts which explain each skill and completing the worksheets and exercises suggested, you will become more and more competent in the exercise of effective library research.

NOTES

1. This list is based upon a briefer list of critical thinking skills by Mona McCormick, "Critical Thinking and Library Instruction," RQ 23 (Summer 1983):339-342.

ANALYZING YOUR SUBJECT AND BEGINNING YOUR RESEARCH PLAN

How many times have you heard that the first step of an undertaking is the most important? Certainly this is true with a research project. The initial stages of your research are critical and should not be rushed through. It is now that you must plot a map which will direct the rest of your project. In fact, library research will probably seem hopelessly overwhelming without an adequate plan developed at this stage. Your college or university library will often provide uncountable individual sources of information related to the subject you intend to study. Thoughtful planning at this stage can clarify the choices you should make among these rich resources. So that you may develop a research plan for your own project, this chapter will help you to consider carefully the focus of your own research and to outline the type of information that you will need to uncover. With this research plan in hand, you will be well on the way to producing a successful project.

The worksheets provided in this chapter, will be very useful as you develop your research plan. Here you can record your plan as you begin to analyze the components of your subject, focus your personal inquiry, and note the information that will be required by your investigation.

Analyzing Your Subject

You are probably now in the initial stages of choosing a topic. Often the choice of a topic is thought to be a simple, quick decision in the research process. However, choosing a topic can be the most challenging step and certainly is one of the most important decisions you will make regarding your project. At this point you may not have any clearer idea than it must be a history topic, or a literature topic, or a science topic, or even that it can be research in any field that you choose! Whether you are at this early stage, or are even a little more focused with a specific concern such as nuclear energy, Shakespeare's comic technique, or teenage suicide, it is very important that you spend a fairly significant amount of your research time learning the "in's and out's" of the topic or topics you are considering. This background research will be the basis for your subject choice. With some initial investigation of possible topics in the field, you will be able to choose one that will not only be interesting to you, but will also be of a manageable size for the time period you will be devoting to this research project --- that is the amount of relevant research materials is reasonable for you to read and analyze in the time allotted for the project. Although it occurs less frequently, undergraduate researchers do occasionally choose a topic that is

not supported by sufficient research for their study. Background research can quickly clue you into the lack of sufficient information.

If you only know a subject field, i.e. business, psychology, environmental protection, French literature, etc., that you want to work in, ask a librarian or your instructor to suggest journals in the field or a specialized reference book that you might browse for topics of current interest and investigation. For example, if you are preparing to research a topic for your biology survey course, you could spend some time browsing through journals such as Current Science, Scientific American, American Naturalist, or the yearbooks of the McGraw-Hill Encyclopedia of Science and Technology. In these sources you might notice articles about the impact of Kuwait's burning oil wells, a theory that lightning originally sparked life on earth, or new drugs for Alzheimer's disease --- all possible topics for further investigation by you.

If you are not limited to one subject discipline either by the particulars of your research assignment or your own interest in a specific field, you may find general sources more useful in this initial canvass for research topics. For current topics, a news magazine such as Time or Newsweek can be helpful. In the reference section of your library there are many sources that can suggest both current and historical topics. A librarian can help you find publications such as the easily to browse, one volume Random House Encyclopedia or a chronology that briefly reviews major events of history such as the Chronicle of the 20th Century, or a compilation of editorials on controversial topics such as Editorials on File. Resources which can suggest topics are almost limitless. All there is for you to do is enlist the aid of your reference librarian in discovering those most useful to you!

Turn now to the worksheet titled ANALYZING YOUR SUBJECT and complete Step 1. If you are fairly confident of a more specific subject for your research, you may go on now to read about Step 2.

Step 2 in the analysis of your subject allows you to delve into the components of the topic you wish to study. This preliminary exploration will help you identify key issues, clarify important concepts, and determine the central persons or groups involved in the subject. Knowledge of these factors will direct your research plan and make your work much simpler and more effective. All experienced researchers know that research is a process which can lead to dead ends as easily as to successes. This preliminary analysis of your topic can help you avoid pitfalls along the way.

In the library, subject encyclopedias are very useful in this phase of your subject analysis. Subject encyclopedias differ dramatically from general encyclopedias such as World Book, Britannica, etc. Subject encyclopedias focus upon one discipline and discuss topics in that field in much greater depth than can a general encyclopedia which attempts to address all topics. For this reason these encyclopedias serve as excellent background sources for analyzing a topic. There are a vast array of subject encyclopedias available covering a broad range of subject disciplines. Check your library's catalog to find if

your library has an encyclopedia for your subject. Simply look for the discipline that includes your topic, such as "music," "chemistry," "United States - History," etc. Then find the subdivision --- "Dictionaries." (This word is used instead of "encyclopedias" in most catalogs.) Some examples of these subject headings are listed below.

BIOLOGY --- DICTIONARIES
GREAT BRITAIN --- DICTIONARIES
DRAMA --- DICTIONARIES

With subject headings such as these in your library's catalog, you may locate works such as the Encyclopedia of World Art, the Encyclopedia of Crime and Justice, or the Encyclopedia of American Religions. Certainly, your reference librarian can also suggest specific subject encyclopedias if you have any difficulty locating titles in the catalog.

There are many other types of information sources that can provide background readings to aid in your subject analysis. For example, the articles in subject encyclopedias often present brief bibliographies of background sources. Discussing your interest with an expert on the topic can be a very effective way to gain an overview of the topic. Even scanning the subheadings of a relevant textbook chapter or scrutinizing the tables of contents and introductions of books on the subject can be useful. These are only a few examples of the sources of information which can provides background for you as you complete Step 2 of the ANALYZING YOUR SUBJECT worksheet. If you have any difficulty locating appropriate sources for this phase of your research, consult your reference librarian for assistance. The librarian can suggest other sources in your library. This is also the professional who can advise you if you are concerned that you have chosen a subject for research which has not been studied or written about in sufficient detail to support your research project. Take time now to read the background sources you and your librarian have identified and answer the questions for Step 2 of the ANALYZING YOUR SUBJECT worksheet.

ANALYZING YOUR SUBJECT
WORKSHEET

Step 1

Ask your course instructor or librarian to suggest specific sources that you may browse for interesting topics of research. List those sources below.

Sources Suggesting Possible Topics

_____

_____

_____

_____

_____

List at least five topics that you find intriguing for further investigation.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

Step 2

What subject would like to begin analyzing for your research project?

_____

_____

_____

_____

Identify as many background sources as possible (i.e. subject encyclopedias, books, known experts, etc.) List below full bibliographic citations (author or speaker, title, place of publication or conversation, publisher, date, and page numbers as appropriate) for these sources in case you need to retrieve them again.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____

6. _____

_____

USE THE BACK OF THIS SHEET FOR FURTHER
BACKGROUND SOURCES
IF NECESSARY

Analyzing Your Subject Worksheet -cont.-

As you read these background sources consider and make notes concerning the following questions.

What are the major divisions or aspects of your topic?

What are the key concepts and terms related to the topic? (For example, research on abstract art would be concerned with biomorphic art, geometric abstraction, and abstract expressionism.)

What facts (i.e. dates of specific events, geographic centers of activity or interest, etc.) do you know about the topic?

Continue listing known facts here.

What groups, organizations, or individuals are involved in the subject-matter? (For example, safe sexual practices involves single individuals, parents, school counselors, health professionals, religious organizations, etc.) Think as broadly as you can about interested parties and groups affected by the concern.

What are the problems/challenges which individuals involved in this field are facing?

Are there any conflicting views of the subject? List those points-of-view which you can identify below.

Focusing Your Research

Now that you are familiar with the general subject you would like to study, it is time to begin to focus your investigation. You have probably already realized during your background reading, that as you learn about a subject you come to see more and more of its complexity --- the interrelated topics, competing interpretations of the facts, and the interdependence of related concerns. Effective library research often necessitates that you break these complex topics down and investigate each of the elements separately. Moreover, due to time constraints, you may be able to focus in-depth research on only one or two aspects or issues which form parts of your original subject. It is important, however, that you keep in mind the general hierarchy of the subject, i.e. know how the aspects with which you are primarily concerned for this project impact and flow from other elements and divisions of the general subject. This orientation to the structure of a broad topic comes out of the background reading you have been doing. You should note those relationships when you analyze and report the results of your in-depth research. Any conclusion or decision that you would want to advance based on your research will be realistic only if the interrelated nature and interdependence of the topic elements are understood. For example in a social sciences course you might wish to investigate one aspect of the level of violence in our society. While there are many manifestations of violence, one of the more specific aspects you might follow is domestic violence. This issue could be further subdivided into possible causes, myriad treatments, and proposals for government policies. Specifically, you might choose to look at one controversial claim regarding causes --- that this problem is primarily a reflection of a male-centered social system. Even if you don't deal now with the larger issues of effective governmental policies, possible societal solutions, individual treatments, etc., it is important to remember the connections between the narrow issue you are studying and the rest of your general topic of concern. If you decide that a male oriented society is a significant cause of domestic violence, certainly your perception of treatments and solutions will be affected. Later, perhaps in other courses, you may wish to investigate these other issues --- for example specific treatment therapies --- in light of your findings concerning causes of domestic violence. For now, however, you have chosen a narrow element of a broad topic, so that it is manageable for your one project.

Look back to the information you have recorded about your subject on the first worksheet --- ANALYZING YOUR SUBJECT. Consider particularly that information you have listed under "major divisions or aspects" in conjunction with responses concerning "problems/challenges of the field" and "conflicting views." Here you can find excellent ideas which will provide a specific focus for your research. Indeed, you will find that items listed in these two categories work hand in hand. For example, if you are studying euthanasia, some of the main aspects will be legal responsibilities, moral obligations, psychological impact, and financial consequences. One of the main controversies, whether doctors can or should aid terminal patients and/or their families to commit euthanasia, presents questions for the researcher in each of the subject aspects

listed. Look for connections between the controversies or problems related to the subject and the topical divisions of the subject as you search for an interesting focus to your research. In the example listed above, a researcher might choose to focus upon the legal challenges doctors face when they believe euthanasia is the best course of action.

It is important to note that you are developing a focus for your research now --- not a thesis. A thesis is a statement of your conclusions. Since you are only beginning your research, it is much too early for a conclusion. Some examples of focus statements and thesis statements may clarify this difference.

Focus Statement:	How strong is the economic health of professional sports in the U.S.?
Thesis Statement:	The modern shift of economic power in pro baseball to the players' union may cause several to lose their franchises due to economic collapse of the team.
Focus Statement:	Can organic farming significantly reduce toxic poisoning of streams, rivers, lakes?
Thesis Statement:	Inadequate distribution methods is the major obstacle to a reduction of water pollution through increased consumption of organic farm products.
Focus Statement:	Who are the leading contemporary composers of classical music?
Thesis Statement:	Hans Werner Henze is the most outstanding of the current generation of composers.

As you can see, it is often useful to phrase your subject focus as a question you wish to investigate. This will help you remain open to various answers, i.e. thesis statements, while your research is ongoing.

Spend some time brainstorming about the connections between the specific subject elements and the controversies or problems of the subject you have chosen to study. In this way you can develop a research project that allows you to analyze a question, delve into a tantalizing problem, not merely report endless facts. List your research focus on the page titled FOCUSING YOUR RESEARCH and answer the questions listed on this worksheet. These questions will be the blueprints of your research plan.

FOCUSING YOUR RESEARCH
WORKSHEET

Upon which subject aspect(s) and controversy(ies) would you like to focus you investigation?

List below the various points of view regarding this controversy or problem.

Are any of these views in conflict?

What could be the outcomes of the differing courses of action or interpretations advocated?

Now that you have identified the major concerns related to your subject and focused the direction of your own research, you are ready to outline the requirements of your research. Based on the general information you now know, list below the information that you will need to locate in the library in order to thoroughly research the specific topic element you have chosen to study. NOTE: The completion of this worksheet is an ongoing process. As you read and study new information sources you will discover new factors to follow-up upon and will want to add them to your research plan.

INFORMATION NEEDED WORKSHEET

What facts (for example statistics, geographic features, names, dates, pictures, etc.) do you need to know about this topic?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Whose opinions would it be useful to read? (For example, eyewitnesses, lobbyist groups, professionals in the field, editorialists, historians, etc.) Be as specific as possible. If your background readings have suggested specific names, note those here.

_____

_____

_____

_____

_____

Continue listing groups and individuals whose opinions you would like to read here.

Which subject disciplines, i.e. political science, biology, education, business, art, etc.,are involved? (This is a very important part of your research plan. Rarely is an issue of concern to only people in one field. It may be useful to ask yourself would a business executive have any interest in the topic? A religious leader? An artist? A politician? and so on. This approach may help you identify relevant disciplines.)

GATHERING INFORMATION SOURCES

With the beginnings of your research formulated, you are ready now to begin retrieving relevant information sources. This step in the research process is much simpler than the initial subject analysis you have just done. Indeed it should go very smoothly if you take advantage of the knowledge you have gained through your background analysis. In the library, there are many research guides that will help you identify sources of information and a library staff that will assist you in retrieving publications you choose for your project. What you must do is use the information you have already gained and recorded on your worksheets to:

1) choose the library guides you feel will be most closely connected to the focus of your research,
2) use the key concepts and terms you have read about as headings for identifying appropriate sources in these guides,
3) and decide which of the possible sources you wish to retrieve and study.

As you make these choices and decisions in the library, the information you have compiled concerning your subject's elements, facts you need to know, and persons or groups concerned with the issue will be your primary guide. In addition, the discussion and instructions in this chapter will help you complete this stage of your project. Remember, if you have difficulty gathering sufficient information concerning any aspect of your study, the reference librarians in your library are available to assist you. Don't neglect to take advantage of this professional assistance!

Determining Appropriate Library Research Guides for Your Topic

You probably know from other occasions when you have worked in a library that there are many guides to the information and collections kept there --- card catalogs, indexes, serial listings, map files, abstracts, handbooks . . . to name just a few. Each type of guide has been developed to provide researchers access to specific types of information sources. In order to gather materials for your research, you must choose which of these library guides are most likely to help you uncover the information you need for your project. Examine below the types of information sources typically held in library collections and the guides that serve to access each type of source. This information should help you choose library guides for your project.

First, think back to other research projects you have had --- other papers, researched speeches, take-home tests, researched essays, etc. Has there been one specific type of guide or reference source that has turned out to be most useful in your research? Experienced scholars often suggest that the most valuable resources are authoritative BIBLIOGRAPHIES. In these guides you often find a critically selected list of sources --- books, periodical articles, government research, statistical studies, etc. --- that another researcher has discovered as the most important sources for study of that topic. If you haven't used bibliographies to gather research material before, consider this. In the bibliographies you have written for research projects previously, or in the bibliography you envision for this project, is every source uncovered during your information search included? No, certainly not. Bibliographies reflect your gained expertise on a subject and you list only those sources that have proved to be the most valuable --- the most current, the most thorough, the most illuminating, etc. Hopefully, other researchers that provide bibliographies with their work, either as a separate list of sources or as footnotes, have made these same decisions about the information sources they are suggesting to you. Indeed, if you locate a well researched bibliography to use in your project, it is as if you have a research assistant working along with you on your study. This assistant, the bibliography's author, has already weeded through a large number of information sources and is presenting you with a list of the most important ones. Any time in your research that you discover a bibliography, give it careful consideration, choosing titles cited that will have relevance to your topic's focus. If you take advantage of these important research guides, you will find you are several steps ahead in your gathering of information sources.

Let's consider other types of library guides that will provide access to specific categories of information sources.

BOOKS --- MOST FREQUENTLY ACCESSED THROUGH YOUR LIBRARY'S CATALOG

Books often provide ***long-range views or in-depth studies*** of a topic. The author of a book on a subject often has had more time, and publication space, to devote to the consideration of causes and outcomes than has had the author of shorter pieces such as newspaper or magazine articles. Although books are not the only sources of these extensive research studies, you certainly should plan to search your library for relevant books. For a few topics, however, you may not find books very useful. For example, if your topic is of very recent interest or if it is a local concern, i.e. something that has happened only in your community, you may not be able to locate books that will aid in your study. If you believe there should be books relevant to your study, but are unable to identify any titles in your library's catalog, be sure to enlist the assistance of your reference librarian.

POPULAR MAGAZINES & NEWSPAPERS --- MOST FREQUENTLY ACCESSED THROUGH GENERAL PERIODICAL INDEXES

Periodicals --- publications that are published more than once, usually at regular intervals --- are of primary importance when doing research on ***new or rapidly developing topics***. The frequent schedule of publication for magazines and newspapers means that articles presenting yesterday's, last week's or last month's developments can be included. Articles from popular periodicals are also valuable resources if you need to find ***nontechnical information*** about an issue. For example, if you are looking for a general description of new medical technology to support a business paper on international trade in these products, you won't need a full length book. An article from a news magazine or a special feature magazine such as Smithsonian would be more appropriate. A third speciality of popular magazines --- particularly news periodicals --- is reporting the ***chronology of specific events***. The news media has been called the "rough draft of history." It is here that a detailed listing of developments are recorded for analysis later, i.e. for the type of research you are doing. A good illustration might be a research project requiring a chronology of the Lindbergh kidnaping investigation, newspapers certainly would be the best source. Finally, popular magazines are often the most important sources for topics of ***popular culture*** --- subjects relating to television shows, current musical trends, fads, pop art, etc. For example, a paper on the connections between rap music and urban culture is going to rely heavily on popular periodicals like Rolling Stone.

Think about your topic. Is it often discussed in newspapers, news magazines, entertainment magazines? If yes, you will want to investigate general periodical indexes which list articles in these publications by subjects. Ask the reference librarian, which general periodical indexes are available in your library.

SCHOLARLY & PROFESSIONAL PERIODICALS --- MOST FREQUENTLY ACCESSED THROUGH SUBJECT INDEXES AND ABSTRACTS

There are literary thousands of periodicals that specialize in publishing the research of professionals in a particular field. Some examples of this type of periodical are the Journal of the American Medical Association, Latin American Studies, the Journal of Research in Psychology, Dance Quarterly. These titles definitely don't sound like the ones you see at your local drugstore, do they? Certainly they aren't often read for general information. However, scholars delving into the study of a topic definitely communicate through these publications. It is in these periodicals

that researchers first publish the results of their work and receive criticism from their colleagues. When you read articles from periodicals such as these you will be gaining insight into the ***latest research done by experts*** in the field you are studying. Most frequently researchers publish studies on ***very focused, narrow topics*** --- as you have focused your research. Therefore, keep in mind that you are more likely to find scholarly periodical articles on narrow topics such as the use of robots to control television cameras at live news events rather than ones studying broader subjects such as the challenges of live television production.

In order to identify specific articles that would support your study, consult subject indexes and abstracts. By checking the library's catalog you can identify indexes relevant to the subject disciplines important in your research. (You have already listed these disciplines on the INFORMATION NEEDED WORKSHEET.) Look for the subheading, "Indexes." For example,

Art-Indexes
Biology-Indexes
United States History-Indexes

Of course, a reference librarian will also be happy to assist you in choosing subject indexes and abstracts. Indeed, in addition to subject indexes and abstracts owned by your library, the librarian may advise you to use the library's online literature searching service. Librarians providing this research service can search indexes not available in your library via computer terminals and modems. The librarian can help you decide if these searches are necessary for your research and advise you of any fee charged for this service.

GOVERNMENT SPONSORED RESEARCH REPORTS --- MOST FREQUENTLY ACCESSED THROUGH GOVERNMENT PUBLICATIONS INDEXES

Governing institutions --- the state governments, international groups such as the United Nations, urban agencies, and certainly the U.S. government --- are very prolific producers of information. The publications of these governments cover legal issues, child welfare, business trends, the economy, gardening, space exploration, and much more. In fact, it is difficult to think of ***any topic outside of the humanities*** that is not discussed in government publications. These publications vary greatly in length and form. You are likely to find bibliographies, specialized research studies, statistical reports, transcripts of congressional hearings, even full-length books.

Check with your librarian to see if government documents are accessible through your catalog. They often are not included in the library's main catalog. If the documents in your library are not, ask which indexes to government publications your library owns.

BEST COPY AVAILABLE

SPECIFIC FACTUAL DATA IN COMPILED PUBLICATIONS --- MOST FREQUENTLY ACCESSED THROUGH REFERENCE HANDBOOKS

In the process of composing your research project, you will find the list of ***specific facts*** required for your study (which you began on your INFORMATION NEEDED WORKSHEET) will grow and become more specific. You may realize you need to know the average buying power of a family in 1980, the birth and death dates of a prominent novelist, the address of a group that serves as an advocate for sexual harassment victims, or a map of a Canadian province. These pieces of specific factual information often are found most conveniently in reference books that compile these details. For example, atlases compile maps, almanacs offer collections of statistical data, directories list organizations active in specific fields. Ask a reference librarian for help in finding the specific facts you need to fill in gaps in your research and to answer the questions you ask as you read about your topic. Librarians know the reference collection well and can direct you to an appropriate source.

RELEVANT LIBRARY GUIDES
WORKSHEET

Note on this worksheet which library research guides you have chosen for your research project. These choices should be based on the list of needed information you compiled in the last chapter.

BIBLIOGRAPHIES
List here the complete bibliographic citations (author, title --- article or chapter *and* periodical or book ---, publisher, date, and page numbers) of bibliographies you find relevant to your topic.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

CATALOG
Do you believe your topic will be covered by full-length books?
____Yes ____No
If yes, which aspects of your topic are most likely to be covered by books?

_____

_____

_____

_____

_____

_____

List below the subject headings that you will use to search for relevant books. (See page 29 for instruction in identifying appropriate subject headings.)

_____

_____

_____

_____

_____

GENERAL PERIODICAL INDEXES

Do you believe your topic will be covered by popular periodicals? (Remember, these publications are very useful if you want a local perspective, a lay person's description, or a news report of a specific incident. They are also good sources for popular culture topics.)

____Yes ____No

If yes, which aspects of your topic?

_____

_____

_____

_____

_____

List below the general indexes your reference librarian has suggest for your study.

_____

_____

_____

_____

SUBJECT INDEXES AND ABSTRACTS

Will articles from specialized scholarly or professional journals be valuable in your study?

____Yes ____No

If yes, look back to your INFORMATION NEEDED worksheet to refresh your memory regarding the subject disciplines in involved in your study. Then identify a subject index that covers each relevant discipline.

Discipline		Subject Index
_____	:	_____
_____	:	_____
_____	:	_____
_____	:	_____
_____	:	_____

GOVERNMENT PUBLICATIONS INDEXES

Do you believe it is likely that governments have sponsored research regarding the focus of your study?

____Yes ____No

Do you feel that a local (city, county, state), national, or international government would be the most likely to have investigated your topic? List below the level of government and any specific states, countries, institutions, etc. involved. This information may have surfaced in your background reading.

_____

_____

_____

_____

_____

_____

Does the library's main catalog include government documents?

____Yes ____No

If no, which indexes has your librarian suggested to access publications of those governments you have listed?

_____

_____

_____

****

You may find it more useful to list reference books that provide specific factual information required by your research directly in your WORKING BIBLIOGRAPHY. In this way, these citations will be included with the other sources that may appear on your project bibliography. Other types of library guides, such as periodical indexes, will not be included in your final project bibliography.

****

Choosing Among Information Sources Available

Now that you have considered the types of publications which are most likely to include material relevant to your study and know which library research guides will help you identify these publications, you are ready to begin gathering your own WORKING BIBLIOGRAPHY. This working bibliography is the list of sources --- books, articles, essays, etc. --- that you wish to read and analyze as you investigate your topic. The bibliography will develop and change throughout your project until you are ready to report the results of your study. At times it will grow longer as you discover a new question to answer. Alternately it will shorten as you examine and eliminate some sources. In the end, this refined bibliography will be the final list of important sources in your study that you will turn in with your research project.

Each of the library research guides you have chosen on the last worksheet, is likely to suggest a large number of sources that might go into your working bibliography. To be most efficient in your gathering of research materials, you must make choices among these suggested sources, using clues in the citations to predict which ones will be most useful for your study. The first criteria you should use, of course, is how closely the source seems to match the particular focus of your study. An easy way to find closely matched sources is to begin working with each research guide by scanning through the subheadings of any subject you look up. Check for subdivisions of the topic that name specifically your focus. These will be your most relevant sources and you will have saved time by avoiding the more general sources that are usually listed first under each broad subject heading. Secondly, you should also closely examine specific titles suggested to you in each research guide for close ties to your study. You may find the best source to be the twenty-eighth one listed. If you began copying down every citation from the beginning of the list, you could well have given up before reaching this valuable source.

Other criteria that will help you make wise --- and time saving --- choices among available sources are:

DATE OF PUBLICATION: Is it recent enough for the latest developments in your field? If you are looking for a historical perspective, is it from the right era?

PLACE OF PUBLICATION: Is the country or state of origin likely to have an impact on the way the subject is discussed? Will that particular perspective be helpful?

RECOGNITION OF THIS WORK OR THE AUTHOR'S WORK AS A WHOLE AS "IMPORTANT" BY OTHER WRITERS ON THE SUBJECT: Is it discussed by other writers, or cited in their footnotes or bibliographies?

TONE OF THE MATERIAL: Does the title sound scholarly, popular, editorial, factual? Does this treatment of the subject match your research plan as you developed it on the the RELEVANT LIBRARY GUIDES worksheet?

REPUTATION OF THE PUBLISHER OR PERIODICAL: Is it a scholarly publisher such as a university press, a publication of a far right or left political group, a publication specializing in sensational reports, etc.? Again, does this type of publication fit into your research plan?

FORMAT OF THE PRESENTATION: When you require maps, statistics, photos, or any other special type of information about your topic, look for these items noted in the citation.

You may not be able to make these judgments about every source that you find listed in the library research guides. However, it is important to keep the criteria formed from your research plan in mind as you choose sources for your working bibliography. If you carefully choose information sources to pursue, you will save a good deal of time that is often wasted in research projects weeding through working bibliographies of inappropriate, out-of-date, repetitive, cursory sources that don't add to your project.

A good way to keep track of your working bibliography is to write the citation for each source you would like to read on a separate index card and number those cards consequently. (These numbers can then be used to connect specific notes you take from each source to the appropriate citation for footnotes in your project.) It is a good practice to record as much information as you are given about each source. For example, indexes to federal government documents often give not only author, title, date, and publisher, but also a Superintendent of Documents number. Although this number may not initially mean anything to you, it may be a key factor in finding the publication in your library. To be on the safe side, copy all bibliographic data (i.e. description of the publication) from the library guides. It is much easier to do this when you first discover the citation than it is to return to the index and find the exact entry again.

Turn back now to the RELEVANT LIBRARY GUIDES WORKSHEET. Look over the guides that you checked as important in your study. If any type of information source seems to be most relevant to the focus of your research, begin with the guides for those sources. To assist you in using the library guides we have discussed, you will find instructions for using library catalogs and indexes beginning on the next page. These instructions along with the assistance of your reference librarian should enable you to find the sources available on your topic.

Using Library Catalogs

Library catalogs offer at least three ways to find specific publications. You can look for a particular title, or the work of a certain author. (This is important when you have identified a significant source through a bibliography on your subject.) Or you can look for publications on a particular subject. While looking for a book by author or title may seem straight forward, do not hesitate to ask a librarian for assistance if you are repeatedly not finding those items you search for in the catalog.

Subject searching in a catalog can be a little more demanding. How can you know the subject terms to use for your topic? The words you use to describe a subject may not be the same as those used in the catalog. For example, if you are studying some aspect of the film industry, would you look up "film", "cinema", "motion pictures", "Hollywood," . . . You would probably be surprised to find no books listed with any of these subject terms. The ***subject heading*** your library catalog most likely uses is "Moving Pictures." You can see that your task is to translate your topic's description into the vocabulary used in the catalog. The preliminary reading and study you have done has probably suggested the common terminology used for your subject. This can be helpful, but these terms still may not match the ***subject headings*** used in the catalog. There are two ways to determine the correct headings for your subject.

If you were fortunate enough to find a recommended book by author or title, the subject headings used for this work will be listed in the catalog record (usually near the bottom of the record.) Write down any relevant headings and use them to look up additional sources by subject.

Most larger libraries use the Library of Congress Subject Headings (also called the LCSH) as the list of subject terms that can be used in the catalog. The LCSH will guide you to the correct headings for your topic. Ask your reference librarian to help you locate the LCSH, or other list of subject headings used by your library.

Here is an example of what you may see in the LCSH:

CBR warfare
See Chemical warfare

Chemical warfare
UF CBR warfare
Chemistry in warfare
RT Decontamination
European War, 1914-1981 -- Chemistry
Incendiary weapons
Smoke screens
World war, 1939-1945 -- Chemistry
NT Gases, asphyxiating and poisonous -- War use
Herbicides -- War use
BT Air defenses
Air warfare
Explosives, military
Military art and science
Strategy
Tactics
-- Safety measures

Boldface print indicates a term or phrase is an official subject heading

UF: Used For

RT: Related Term

BT: Broader Term

--: Subheading of subject heading

When you locate the official subject heading used for your topic in the LCSH, notice the related and narrower headings listed. It may be that one of the more specific headings will fit your topic precisely. Occasionally you may need to use broader headings if your library does not include many sources under the heading for the specific focus of your study. In these broader sources, you are likely to find a source that devotes a chapter or more to your specific subject. List the subject headings you have identified on the RELEVANT LIBRARY GUIDES WORKSHEET and use these headings to begin searching for sources in the library's catalog.

If your library's catalog is automated or computerized (often called an OPAC --- online public access catalog) you can also look for books by keywords. When you do a keyword search, the computer's software examines the records in the database for the terms you have entered. These terms don't have to be official subject headings. They can be words in the titles of publications. Keyword searching may help you pull up records for relevant books even if you are having trouble identifying appropriate subject headings. Keyword searching is especially helpful for very new topics before official subject headings have been decided upon. If you do search for books by keyword, be sure to note the subject headings that have been applied to any relevant material you find. Keyword searches aren't as thorough as subject heading searches. For example, the keyword "body language" may retrieve the record for a book titled Body Language in Business Negotiations, but not the record for Communicated Messages of Position and Gesture. However, both of these books and others can be identified by using the official subject heading "Nonverbal Communication."

Boolean searching (named for a mathematician who studied the theories of sets) is another powerful type of searching that automated sources like OPACs offer. With Boolean searching you are able to combine two or more subject terms into one search to produce a list of possible sources very closely linked to the specifics of your topic. Remember how you focused your topic by

combining a subject element and a question of controversy? Boolean searching allows these combinations to be easily searched. For example, if you were researching the importance of positive nonverbal communication in business settings in a card catalog, you would have to read through all the cards filed with the subject heading "Nonverbal Communication," picking out those that indicated a business connection either in the book titles or in the subject headings for each book listed at the bottom of the cards. With an automated catalog, the computer's software will look for both topics --- nonverbal communication and business --- compare the set of titles found for each subject, and list for you only those that appear in both sets. In this way, a listing of books that discuss both subjects is produced. Below you can see this type of search illustrated.

Call Numbers of Books Discussing Nonverbal Communication	Call Numbers of Books Discussing Business
BF 637 .C45	HD 29 .M6
HF 5386 .C78	HC 106 .M36
HF 5386 .M23	HE 8346 .I64 S25
HM 258 .B67	HF 5343 .D85
HM 291 .A84	HF 5341 .K584
HQ 5386 .D48	**HF 5386 .C78**
P 99.5 .A7	**HF 5386 .M23**
RC 480.5 .A17	HF 5718 .P73
RC 480.5 .A17	**HM 258 .B67**

The list of books you would see as a result of your Boolean search are those common to both sets (in the boxed outline.)

There are three basic types of subject combinations of subjects you can make in Boolean searching:

AND: By combining your subject terms with "and" (i.e. Nonverbal communication and business) you will produce a list of sources that each include both topics.

OR: You should combine search terms with "or" when the terms are synonymous, or when you will accept either subject (for example, birth control or family planning.) With this Boolean connector you will produce a list of sources that contain at least one of your subject terms.

NOT: Using "not" to combine your subject terms eliminates some sources. If you were looking for salary reports for all school personnel other than teachers, you could enter school personnel -- salaries not teachers. With "not" you will produce a list of only those sources that do not include your second search term.
*Use "not" sparingly. In the above example, using "not" would eliminate from your list of sources a research report titled <u>Salaries of Kentucky School Personnel except Teachers and Instructors</u>. If you would like to try "not," check with your reference librarian to make sure you are doing a subject heading search and not a keyword search.

If your library's catalog is automated, the printed manuals, help screens, or one of the reference librarians can help you get started with Boolean searching. The system your library is using probably requires unique command keys to start this type of search. However, the connectors --- AND, OR, NOT --- will always be important to use as you enter your search terms. On the next page, you will find a worksheet that may help you plan Boolean searches.

BOOLEAN SEARCHES
WORKSHEET

Topic:

_____

_____

_____

Search Terms:

	1st Concept		2nd Concept		3rd Concept
	_____	AND	_____	AND	_____
	OR		OR		OR
Synonyms	_____		_____		_____
	OR		OR		OR
	_____		_____		_____
	OR		OR		OR
	_____		_____		_____

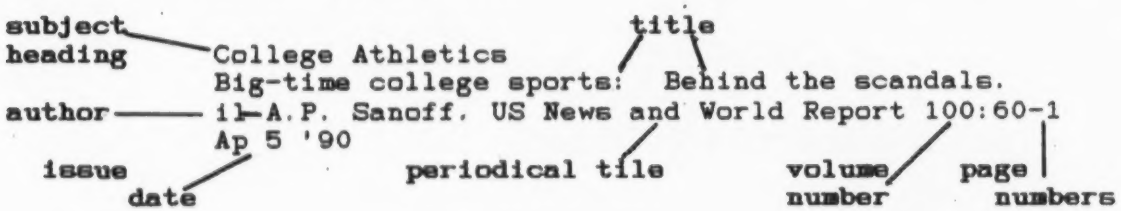
Using Indexes

Whether you are trying to identify specific articles that may have been published in popular magazines and newspapers, or in specialized scholarly and professional journals, or even specific government publications that are not included in your library's catalog, you will need to use a variety of indexes. On the RELEVANT LIBRARY GUIDES WORKSHEET you should have already identified the indexes that you will use as you continue compiling your working bibliography.

Try looking up your topic in one of these indexes. You may have to try several different synonyms before you discover the subject headings used by the index for your topic. Along the way you may find cross-references that will guide you to appropriate headings. Or you may discover that the index you are using has a separate listing of approved subject headings much like the LCSH used for library catalogs. (See pages 30-31 for a description of the LCSH.) Be sure to take advantage of these aids as you use each new index.

If the index you are using is automated or computerized, it is likely that you can do keyword searching and combine aspects of your topic for Boolean searching. Read about these two special types of searching on pages 31-34.

Once you have found the materials listed for your subject in any index, you will need to interpret the citations in order to be able to retrieve copies of the articles or research reports. If you are using a popular magazine index, or a subject index to journals in a particular field, you will find the citations very similar. Some examples follow:



Some specialty indexes also include citations for book-length publications. This type of citation might look like this:

CENSORSHIP

Book Louis, B. Racism and censorship in the college press. New York: H.W. Wilson, 1991

Periodical Smith, A. Black authors: banned books. Newsletter of the Intellectual Freedom Office 38:121+ N'91

A real tip-off to the fact that a book is being cited is that a publisher and perhaps a place of publication is mentioned. This information is not usually given for periodicals. A periodical article is definitely being cited if a volume number is used or a very specific date such as April, 1991, or Summer, 1990.

A citation for a government publication most frequently will be noted with a government agency given as author of the work. An example of a federal government publication follows:

INSURANCE, HEALTH
United States. House. Com. on Small Bus. Subcom. on Antitrust, Impact of Deregulation and Privatization. State efforts to increase the availability and affordability of health insurance: hearing. August 10, 1990. '90 iii + 172p. il tables charts. (SD cat. no Y 4.Sm 1:101-76)

After listing those articles or publications that you wish to read, you should find out if your library's collection includes the periodicals or government reports you need. Ask your librarian where you can check these holdings. In addition, if you have any trouble interpreting the parts of an index citation, ask for help. For example, if you use a newspaper index or if you have decided to use a subject index that includes abstracts, you are likely to see a different style of citation. Don't waste your time, ask a librarian to clear up any questions you have.

Locating Sources Not Owned by Your Library

If you library does not own some of the articles or books that you have listed in your working bibliography, you can still obtain copies of these materials by using the Interlibrary Loan Service offered by most libraries. The Interlibrary Loan staff will borrow books or obtain photocopies of periodical articles from other libraries which do have the materials in their collection. Your reference librarian can assist you if you need this service. CAUTION: It may take days, maybe even weeks, to obtain the requested materials. Start your research early in case you should need to use this service. Also, some libraries must charge for some or all of their Interlibrary Loan Service. You reference librarian can inform you of any charges you may be responsible for before you request any materials.

READING AND ANALYZING

INFORMATION SOURCES

Now that you have gathered an initial group of information sources which fulfill the INFORMATION NEEDED you noted earlier, you have reached a very enjoyable stage of your study. As you read and make notes from each of the information sources you have chosen, you will find yourself taking part in a conversation between individuals in different places and times. This is the way researcher Michael Oakshott described the research process.' Through your reading you will "hear" other researchers' thoughts about your subject. More importantly, you can participate in this conversation, asking questions, making evaluations, and assimilating new information, as you construct your own view and form your own decisions regarding the topic.

Indeed, not only can you participate in this conversation, you are the director of the discourse. You have already decided who will be included in the discussion through your initial analysis of information needed and your selection of appropriate information sources. It is important that these sources of information represent the competing points of view voiced about your topic. Remember that wise, sound decisions are based upon a consideration of the variety of viewpoints. It is human nature to resist considering alternate views of an issue. It's simply easier to read and accept only one view rather than to struggle with inconsistencies of data, competing statements, emotional appeals, and unanswered questions. These problems are certainly illuminated when you begin to examine the issue from different perspectives. However, this is how creative thinkers gain insights and develop new solutions. Unless you have the courage to look at an issue or topic from alternate points of view and imagine new conclusions, you will never be able to delve beyond a surface understanding of the issue. Even on those occasions when you do not change your mind about a topic as a result of this open consideration, you will have a deeper understanding and commitment to the decisions you have made regarding the issue.

Your leadership role in the research conversation should continue as you read the relevant materials. Imagine yourself as the head of a corporation reviewing recommendations before deciding upon a course of action for the company or perhaps a judge hearing a case involving your topic. "Listen" carefully, noting any facts, opinion, data, insights that will be helpful when the time comes for you to make a decision regarding your subject. This information which you record can perhaps be best organized by using note cards that can be easily read through again, rearranged, and compared to other findings you make.

Recording each idea on a separate card is helpful. Be sure to connect each note that you take with the source that presented the information. This can be done by indicating on each note card the number that you have assigned to the source in you WORKING BIBLIOGRAPHY. This type of record keeping makes accurate reporting of your research a simple process.

Noting Frames of Reference

As you abstract information from each source, try also to note the frame of reference from which the source is written. It is important to remember that we all see facts in different ways. Think back to a movie that you loved and your best friend hated. Did you see different movies? Or did you go to the movie with different expectations? Different frames of mind for enjoying the movie? The same can be said of any topic of serious research. We all approach the subject with different combinations of backgrounds, expectations, and values. These differing frames of reference direct our ***interpretation of the facts*** pertaining to a subject. We are likely to emphasize factors that support our values, or are similar to our own past experiences over any information that is contrary to these frames of reference. As a simple example, upon an invitation to go jogging in a city park, a recent victim of a street mugging is likely to emphasize, in his/her evaluation of the facts, crime statistics over data supporting the health benefits of exercise. Likewise an author's interpretation and reporting of facts will be strongly influenced by his/her frame of reference. Your consideration of factors such as the author's credentials, his/her purpose in writing the piece, time period when the information was gathered, etc. is the only way to make a complete and accurate analysis of the information presented.

Let's examine some of the questions that you should ask as you read each of the information sources you have gathered. The back of your WORKING BIBLIOGRAPHY citation cards may serve as a good place to record your impressions of each work's frame of reference.

1) Initially skim the contents of the source, concentrating on the introductory sections. Does the source seem to:
--match the description you have noted about INFORMATION NEEDED, i.e. does it answer some of the questions you are asking about your topic, and
--is it written on a level that matches both your understanding and the purpose to which you intend to apply the information. This has to do with the question discussed earlier concerning whether general, nontechnical discussions or scholarly, advanced research will be most valuable for your project. If, in your initial scan of the source, you discover bibliographies and/or footnotes and professional jargon you are likely to have retrieved a specialized scholarly source. On the other hand, brief articles

or chapters, slick, attractive page layouts with pictures or other graphics, advertisements in periodicals, usually indicate a general interest, nontechnical source.

If you do not answer yes to either of these initial questions as you begin examination of the source, you will probablywant to eliminate it from your WORKING BIBLIOGRAPHY. This is a quite frequent occurrence. Despite every effort to weed through lists of possible sources as you gather your information, there will be some sources which turn out to be of a different nature than that you had anticipated by examining the clues in the library guide citations.

2) Secondly, try to find out as much about the author of the source as possible. His/her background --- education, personal experience, occupation, affiliation, other work in this field --- will be relevant to your analysis of that author's interpretation of the facts surrounding your topic. Remember that in some cases, an author might be a group, such as the American Medical Association, the AFL-CIO, Amnesty International, etc. Investigating the history and goals of these group authors is also valuable. You may find information about the author's background in the information source itself. If not, consult your reference librarian to locate biographical details that may be available in other reference books in your library.

3) Equally important are questions you should ask concerning the goals and purposes of the publisher of the information source. This may be the periodical that has included the article you are using or the publishing organization that has produced the book or research report you have chosen.
   --Does the main purpose of the publication seem to give opinion, i.e. try to convince or persuade, or to report facts?
   --If it's persuasive or an opinion-based publication, can you determine the viewpoint being advocated? Many periodicals and some publishing companies have distinct political and/or social agendas that direct their choice among sources to publish. Some of these goals may be obvious to you. For example, you may recognize William F. Buckley, the editor of National Review, as a widely known conservative leader in the U.S. Or you may have selected a book that is published by the Feminist Press. In either case you can expect a point of view from the author which is consistent with that of the publisher. A reference librarian or a

perhaps your instructor can help you determine editorial philosophy of publishers with which you are unfamiliar.

--Another question regarding a publication you may find useful to answer is whether materials are written by a reporting staff or are submitted and reviewed by independent experts before publication. Any information you can find describing the publisher's review policy will help you ascertain how significant the information source you are reading is judged by specialists in a particular field of study. You are most likely to find expert review of an author's research when consulting scholarly periodicals. In these cases, as we saw earlier with bibliographies, one or more experts has already evaluated the importance of this source before it was accepted for publication and has recommended the work to you. Note, however, that not all scholarly periodicals employ such a review procedure. Look for a page giving "Instruction to authors" or "Instructions for submitting manuscripts" in the periodical to verify the review policy. You should also be aware that not all published materials have been reviewed for accuracy. Although we would like to believe that all that is printed is truth, that is simply not the case.

4) Finally, you can judge a good deal about frame of reference from the content and presentation of the information within the source itself.

--Take a moment to look again at the date of the information source. You have already considered the date of publication when choosing the source from the listing of citations in a library research guide. Now try to ascertain the date of the research. Frequently, an author's research has ended long before the publication appears in print --- even as long as several years previously. Check footnotes, bibliographies, dates given for statistics, etc. to determine the age of the research.

--Is this a primary or a secondary report of information regarding your subject? A primary source is very close to the event or issue --- an eye witness report of the reactions of women in battle situations, an unabridged copy of an author's poetry which you intend to critique, a medical researcher's report of the results of a epidemiology study. Secondary sources are reviews and interpretations of these primary sources. For example, a Pentagon recommendation on combat assignments for women in the military, a critique of a poet's references to nature, or predictions for future levels of AIDS infections based upon a current epidemiology

study --- these would all constitute secondary research. Both primary and secondary sources are useful in your study. The different perspectives can enrich your view of the subject.

--How strong would you rate the author's research? (Very Strong, Strong, Weak, Very Weak is a good scale to keep in mind.) As you read, ask yourself if the conclusions seem justified by the information presented? Are the connections between statements logical? Do the links between stated causes and effects appear reasonable? Is the data verified in other sources you have read on the topic? Are any obvious biases evident in the language used or the choice of data presented? Are you struck by any strongly emotional appeals? Do you see broad generalizations? Search for proof of assertations. For example, a statement such as "Children spend an average of 4-5 hours daily watching television rather than playing with contemporaries and therefore do not learn social interaction skills," does not prove the stated conclusion. Sociological studies showing a difference in the level of social interaction related to differing amounts of time spent watching television might be more conclusive. Watch out for black and white arguments, either/or statements; these statements can rarely be proved true in every situation. Question irrelevant arguments such as "The young man was obviously guilty; his whole family has been involved in crime." Be wary of empty abstractions such as "It is un-American to ..." "Any serious student of music would agree . . ." You, or your audience, may not have the same definition of "un-American," "serious student," etc.

The Importance of Questioning Your Sources

These questions probably seem very difficult to answer. Certainly, any researcher will not able to find answers to all these concerns about each and every source. However, the significance of this step of the research process lies in the questioning, not in the answering. A questioning, challenging attitude is the key to effective information use. By questioning conclusions, goals, selection of data, etc., you are actively testing the strength of different views of the subject. This type of analyzing will be the only foundation strong enough to support your own developing conclusions. You may remember from the "Introduction to Library Research" at the first of this text that the majority of the research skills mentioned focused upon questioning skills.

Therefore, a vital qualification for an effective researchers is a readiness, a determined mind, to question his/her information sources. You may not feel qualified to judge the experts who have written or produced your sources, especially as you begin study in a field, but remember you are certainly qualified to question their research. The questions discussed in this chapter will be your tools for this analysis. Remind yourself that your role in the research process is to question the participants in your research conversation.

How can you improve your "answering" skills, your qualifications to judge an author's frame of reference and conclusions? Certainly, as you become more knowledgeable in a field --- for example your chosen major, or your favorite hobby --- you will build a store of information by which to measure and judge any new information source. In fact, you will even notice an improvement in your ability to judge sources as you move further along through this project. And, as always, your reference librarians can be of great assistance to you. For example, there are reference guides for locating reviews of books you may have chosen for your project. As we have already discussed, there are evaluations of periodicals and biographical sketches of authors available in your library also. Any time a source brings up several unanswered questions regarding its frame of reference, feel free to consult your librarian for some expert assistance.

Other authors can assist you to answer your questions also. As you read each information source, and particularly as you question the source, you are likely to think of additional information you will need to thoroughly study your topic. For example, a judge frequently asks for more information before making a judgment --- from doctors, social workers, probation officers, even the accused. The corporate executive is sure to send his/her staff out to gather consumer reactions, details of tax benefits, the competition's market share, etc. You should make a list of questions you have which require additional information as you read the information sources you have already gathered. This will be an extension of the INFORMATION NEEDED plan you began earlier in your project. On the next page there is a worksheet for you to record this ADDITIONAL INFORMATION NEEDED. Then you can go to the library at your convenience to gather sources that will provided this additional data.

NOTES

1. Michael Oakshott, quoted by Kenneth Brufee in his article "Collaborative Learning and "The Conversation of Mankind,'" College English 46:638 (1984)

ADDITIONAL INFORMATION NEEDED WORKSHEET

What facts do you need to know about this topic?

Whose opinions would it be useful to read? Be as specific as possible.

Which subject disciplines are involved?

Formulating Your Thesis

Undoubtedly, as you have progressed in your reading, questioning, and analyzing of the information sources related to your subject, a thesis for your research report has been taking shape. Perhaps it even seems that you have been clearly drawn to a conclusion or specific point of view regarding the issue. You may have found the evidence overwhelming that a vegetarian diet is the healthiest system of nutrition for you. Or you may be convinced that the Yew tree of the Pacific Northeast should be conserved at all costs --- even denying its bark as treatment to some cancer sufferers. Or your study of twentieth-century Expressionism has pointed to Edvard Munch as the most significant artist of this group.

On occasions, however, in the study of complex issues, your thesis may not take the form of such a clear-cut decision. You may have discovered that there are many valid points-of-view, equally significant causes and effects, or many interrelated concerns to consider as you continue to work toward and understanding of the subject. In these not infrequent cases of complex study, your thesis will be a statement of the relevant issues to be considered by the audience of your research report. As we discussed early in this text, a significant research step is the identification of the components of the issue or problem, the investigation of the claims of competing points-of-view involved, and the review of research conducted to date. If you are able to develop a coherent, logical review of these relevant factors *and* communicate that overview to your audience, you have accomplished a significant task.

Developing Your Report

Now is the time to explicitly formulate your thesis --- whether a description of the issue --- and to develop an outline of the evidence you have gathered to support that thesis. A review of the notes you have taken from your information sources will help you to write this outline. Remember, that the most convincing discussions are those that acknowledge disagreeing research when advocating a specific perspective or course of action. Didn't you find those authors who convinced you that they had considered alternate evidence the most compelling and trustworthy? It may be easier to include these opposing views if you realize that a "black and white" argument is not necessary. The decision or perspective you advocate does not have to be the only "right" answer. In your report, you may merely decide that despite merit to these counter arguments that you value other considerations (for example, esthetic values, religious morals,

etc.) which favor your conclusion. In either case, your audience is more likely to understand, respect, and consider your position valid if you reveal the breath of your research.

Information Research and Communication Skills

As you prepare your outline and flesh it out into an effective report you will find that the presentation skills you practice and develop in composition and communication courses are invaluable. Indeed these communication skills are just as central to your understanding of an issue as are the information research skills you have been practicing as you have worked through this text. Many scholars find that striking insights and inspirations occur as they prepare to communicate their findings. The organization of ideas, review of information found, and the attention to detail that is necessary for effective reporting often illuminates key factors and draws connections among disparate phenomenon. Of course, these insights, even when they appear to be sudden strikes of lightning, are the culmination of the serious study completed in the information research phases of your project. Without this preparation, a researcher would have no wood for that fire of insight.

FUNCTIONING IN AN

INFORMATION BASED SOCIETY

In the complex and fast-paced world today, a successful decision-maker will be repeatedly required to effectively gather and analyze information sources. Critical information use skills will be invaluable as you study any issue of importance in your occupations, your avocations, or those decisions you make as a responsible member of society. Without the ability to research information sources, you will be limited to your own personal experiences. Library research puts the world of specialists and the lessons of history all at your disposal. The skills presented in this text are the basic abilities necessary to take advantage of the vast amount of information available. By attending to the develop of these skills, you can build a highly sophisticated faculty for library research and effective information use.